PROTECTING WHOOPING CRANES AND COASTAL HABITATS IN TEXAS
DEAR EARTHWATCHER,

We all know the importance of water: we drink it and use it for a wide variety of activities that improve our health and lifestyle on a daily basis. For most of us, clean water is readily available at the twist of a faucet, but for many people around the world, water conflicts and water availability are a part of daily life. Global environmental shifts and increased water usage has made the fear of running out of water a reality and is leading researchers to explore how we can use less as supplies dry up.

In response to this need, we have been studying ecosystems where water availability is a critical factor, specifically, estuaries and coastal ecosystems along the central Texas Gulf Coast in the San Antonio/Guadalupe Estuarine ecosystem. This estuarine ecosystem is home to a wide range of aquatic and terrestrial species, including the endangered whooping crane—a species that depends on continued freshwater inflow to the estuary for its food, habitat and long-term success.

All ecosystems, including coastal wetlands, experience a wide range of natural and anthropogenic [human-induced] influences that occur at various frequencies and magnitudes (e.g., the influence of daily tides vs. the impact of a large hurricane). These “ecosystem drivers” can have a wide range of impacts affecting virtually every level of the coastal ecosystem. Ecosystems are inherently resilient, often able to withstand considerable stress. However, each ecosystem has a tipping point, a point in time where stressors can cause a shift in how an ecosystem is structured and how it functions.

During this expedition, you will help by increasing understanding of how coastal wetland hydrology, including hydrologic connectivity and regional weather events (e.g., precipitation and drought) have impacted the flora and fauna in this complex coastal ecosystem. Specifically, you will collect data in coastal wetlands, bays, tidal creeks and saltwater ponds to determine how water quality, nutrients, food resources and overall habitat quality has been affected by recent droughts, local rainfall events and short-term freshwater inflows to the estuary.

We will then attempt to make key linkages between these ecosystem level measurements and habitat usage of the whooping crane. This research will help citizens in the watershed, regional water managers, and habitat/wildlife conservation managers to better visualize the connections that occur in this coastal system between hydrology and the various levels of the coastal food web—with the long-term goal of understanding the broad importance of the greater watershed and hopefully securing its long-term health and preservation. We can’t wait to have you on our research project!

Sincerely,
Dr. Jeffrey Wozniak
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GENERAL INFORMATION

PROTECTING WHOOPING CRANES AND COASTAL HABITATS IN TEXAS

EARTHWATCH SCIENTISTS
Dr. Jeffrey Wozniak, Assistant Professor
Sam Houston State University
Ms. Lindsey Tiegs, Graduate Student
Sam Houston State University

RESEARCH SITE
Aransas National Wildlife Refuge, Austwell, Texas

EXPEDITION DATES
Team 1: December 11–17, 2016
Team 2: January 8–14, 2017
Team 3: February 12–18, 2017
Team 4: March 12–18, 2017

Complete travel information is not available in this version of the briefing.
Please contact Earthwatch with any questions.
Read this expedition briefing thoroughly. It provides the most accurate information available at the time of your Earthwatch scientist’s project planning, and will likely answer any questions you have about the project. However, please also keep in mind that research requires improvisation, and you may need to be flexible. Research plans evolve in response to new findings, as well as to unpredictable factors such as weather, equipment failure, and travel challenges. To enjoy your expedition to the fullest, remember to expect the unexpected, be tolerant of repetitive tasks, and try to find humor in difficult situations. If there are any major changes in the research plan or field logistics, Earthwatch will make every effort to keep you well informed before you go into the field.
THE STORY

The Aransas-Wood Buffalo population of whooping cranes (Grus Americana) is the last wild, migratory flock of the species in the world. The coastal marshes of the Aransas National Wildlife Refuge (ANWR) provide crucial winter habitat for this species which had a population low of only 16 birds in 1941 and is currently estimated to be 329 individuals (Stehn and Prieto 2011; US Fish and Wildlife 2016).

Whooping cranes, considered to be one of the rarest birds on the continent, are the tallest birds in North America, standing 1.5 meters (5 feet) tall with a wingspan of 2.3 m (7.5 ft.). During the summer months, this migratory population inhabits the Wood Buffalo National Park in northern Canada. In the winter, it inhabits coastal marshes at the ANWR on the Gulf Coast of Texas. Since whooping cranes rely heavily on the complex estuarine habitat encompassed by the ANWR, understanding the impacts of environmental stressors on resources in the reserve is a high priority (Butzler 2006; Butzler and Davis 2006). The data collected through this study will be critical to helping conserve the whooping crane and the biodiversity of the ANWR. This research will also contribute to wildlife manager’s efforts to ensure the long-term sustainability of the ANWR ecosystem and to better understand and mitigate human-induced activities in the watershed.
RESEARCH AIMS

Our aim is to gain a better understanding of the coastal marsh ecosystem and to determine the effects of both natural and anthropogenic (human-induced) impacts on coastal habitats and whooping crane resources. We will achieve this by investigating patterns that drive whooping crane territory quality and food resource availability. This will be accomplished by linking freshwater inflows, estuarine water level and local weather patterns to salt marsh salinity, pond salinity and various whooping crane food resources.

Blue crabs (*Callinectes sapidus*) are an important food resource for whooping cranes during their wintering period on the Texas Gulf coast. A portion of our research will aim to determine blue crab abundance across multiple habitat types (e.g., tidal creeks, saltwater ponds, marsh, etc.) as these habitats are critical feeding grounds for whooping cranes. Previous summer-time research conducted in collaboration with Earthwatch has investigated the physiological threshold of blue crabs to highly elevated salinity, elevated temperature, and decreased water depth. The impacts of these environmental stressors on blue crabs can lead to decreased fitness and ultimately death and the removal of a key food resource for whooping cranes. The location and availability of blue crabs across the coastal landscape, which can be driven by coastal saltwater pond habitat quality, may lead to shifts in wading bird and whooping crane territory selection and changes in feeding behavior.

In addition, we aim to determine the abundance of the Carolina wolfberry (*Lycium carolinianum*), another key food resource for wintering cranes. Wolfberry plants, which are found distributed across the coastal marsh landscape, produce a small red berry that is a favorite food for foraging whooping cranes. In sum, we seek to determine how environmental factors affect coastal marsh “quality” (including the presence/absence/abundance of key food resources) and whether or not habitat quality influences wading bird and whooping crane habitat selection.

By gathering data and quantifying aspects of whooping crane resources and habitat quality, our study will inform future conservation efforts and could help lead to crane population recovery.

HOW YOU WILL HELP

You’ll try your hand at a variety of data collection methods. None of these tasks require any special background or talents; we will train you in all necessary skills. From complete novice to experienced naturalist, everyone can participate fully and help us record and interpret our findings.

- **ECOSYSTEM ASSESSMENTS OF FOOD RESOURCES AND WATER QUALITY:** You will help sample a wide range of tidal creeks, ponds, and high marsh plateaus, bays, and uplands in key whooping crane and wading bird territories in the ANWR. At set points along a transect line, you will collect data on vegetation, blue crabs, as well as water salinity, depth, pH, and dissolved oxygen. You will learn to follow GPS readings and trail markings as you sample along transects.

- **WADING BIRD OBSERVATIONS:** You’ll conduct wading bird observations from boats and observation blinds. During observations, you may film wading birds in the field and learn to identify feeding techniques, foraging patterns and intra- and interspecific behaviors elicited to defend wading bird territories. Specific attention will be given to identifying individual whooping cranes that possess bird-specific bands on their legs. These birds have been banded by the U.S. Fish and Wildlife Service and their habitat selection/preferences can be “tracked” by Earthwatch volunteers through repeated sightings and location documentation throughout the wintering period. We will report our findings back to the US Fish and Wildlife Service in an effort to provide up to date information on crane locations and territory selection.
DAILY LIFE IN THE FIELD

PLANS FOR YOUR TEAM

Upon arrival, you’ll receive a safety briefing and a presentation on local history, conservation priorities for the Aransas National Wildlife Refuge, local examples of global issues, the history of the whooping crane and a framework for all the project’s key protocols. When we begin our fieldwork, project staff will introduce and demonstrate each new task; we’ll work with you until you’re comfortable with any new activities. We will also supervise to ensure data quality. On the last day, we will lead you in a discussion of possible solutions to conservation issues.

DAILY ACTIVITIES

All days will start with a group breakfast at the accommodation. You will make your own breakfast and will then prepare a sack lunch. Afterwards, we will have a morning briefing to outline the general schedule for the day. This briefing will give everyone a clear idea of what the day will bring, what supplies you will need and when we anticipate returning to accommodation.

The morning hours will be dedicated to fieldwork including habitat assessments and bird surveys at various coastal marsh sites. Around noon, we will enjoy our sack lunches and a short break out in the field. Afternoons will vary according to weather conditions and research needs. Some days we will tackle more field work while other days we will focus more so on data entry and analysis. After a long day of fieldwork and data collection, we will all return to the volunteer building for showers and relaxation. Then, we will convene for a group dinner and evening wrap up of the day’s events. Guest lectures and supplemental presentations on coastal ecology, whooping crane ecology, etc. will also occur in the evenings.
PROTECTING WHOOPING CRANES AND COASTAL HABITATS IN TEXAS 2017

ITINERARY AND DAILY SCHEDULE

Weather and research needs can lead to changes in the daily schedule. We appreciate your cooperation and understanding.

DAY 1: ARRIVAL

Arrive at Corpus Christi International Airport and meet Dr. Jeffrey Wozniak at baggage claim. Travel to accommodations at Hopper’s Landing. Unpack and settle before having a group dinner.

DAY 2: INTRODUCTION, BACKGROUND & TRAINING

Following breakfast, we will start our day out at the ANWR Visitor’s Center. This facility has a multiple displays that will provide us with a nice background of the different plants, animals and habitat types at the refuge. We will meet with a park ranger who will give us a brief presentation on the refuge. We will also watch a short video or two that will summarize the National Wildlife Refuge system and the endangered whooping crane. We will then go out to explore the terrestrial side of the ANWR—we will complete the “auto-loop” tour of the refuge and stop to make several short hikes to explore various habitats. We will also spend time in the late afternoon reviewing boating safety and will have an introduction to the general field sampling techniques we will be employing. We will discuss how to conduct field research in wetland ecosystem [and how we can best limit our imprint on the ecosystem]. Pending weather conditions, will get out on the water this afternoon and get a general idea for the ANWR aquatic landscape. In the evening we will start to go over field sampling and bird observation techniques so we are prepared for our upcoming time in the field.

DAY 3-6: RESEARCH

The general schedule for these days will be the same: We will have our breakfast at the accommodation then head out of morning field work at various sites along the ANWR coastline. Each day will vary, but our general field tasks will revolve around habitat assessments [water quality, vegetation sampling, etc.] and bird surveys. We will also have time to conduct new research efforts that the group might conceptualize as we all learn more about the system. Depending on workload and weather conditions during this time (as a note, weather conditions in the winter can be variable with storms blowing in with little notice), it is possible for us to rotate two groups: one boat-based team for habitat assessment and one land-based team for bird surveys and data entry. These two groups would rotate between these two activities in the morning and afternoon so that all participants get to experience both activities.

DAY 7: PROGRAM CLOSE & DEPARTURE

On the final day of the program we will spend the morning discussing how our research finds from the program can be used to better preserve and manage the coastal marshes at ANWR. We will seek to understand how current conditions throughout the estuary compare to other extremes that the system has experienced over the past few decades. Depart ANWR and travel to Corpus Christi International Airport.
ACCOMMODATIONS AND FOOD
ABOUT YOUR HOME IN THE FIELD

SLEEPING
You’ll be staying at Hopper’s Landing which is a family owned and operated fishing camp on the shores of San Antonio Bay. Hopper’s is comprised of several rustic cabins. The accommodation is located just 3 miles north of the Aransas National Wildlife Refuge. The cabins offer comfortable shared rooms offering full size, twin size, and bunk beds. Each cabin is climate controlled and has fully functional kitchens and bathrooms. All bedding and bath linens will be provided.

BATHROOMS
Each cabin at Hopper’s Landing has a bathroom facility with hot water and conventional toilets. The volunteer building at the ANWR also hosts both a men’s and women’s bathroom and full shower facility.

ELECTRICITY
You are welcome to bring electrical equipment, as the housing will have standard electrical outlets.

PERSONAL COMMUNICATIONS
Depending on your mobile phone carrier, cell service can be found, but is highly variable in the region. We will carry portable radios in the field with us so we can contact each other and the refuge if needed.

Landline phone number is shown below. Please use this number for emergencies.

Personal communication with outsiders is not always possible while participating in an expedition. Earthwatch encourages volunteers to minimize outgoing calls and immerse themselves in the experience; likewise, family and friends should restrict calls to urgent messages only.
VOLUNTEER CONTACT INFO
ADDRESS: Hopper’s Landing
   PO Box 39 Austwell, TX 77950
PHONE: +1 (361) 286-3331 (8:30 a.m. to 5:30 p.m. local time). This number is for Adella Hopper, Owner of Hopper’s Landing. Please keep non-essential/non-emergency calls to this number to a minimum. After hours, please leave a message (in case of emergency only—this is not a message service). Messages will be reported to the Earthwatch scientist, as needed.

FACILITIES AND AMENITIES
The volunteer building at the ANWR will be the main site for all group activities, including meals, presentations, and relaxation time. The volunteer building also hosts laundry facilities, men’s and women’s bathrooms, and a full kitchen. This building also has TV/DVD player and a collection of board games that can be used during recreational time. Feel free to bring cards, board games or DVDs (there is a big screen TV). The refuge also has a visitor center with interpretive displays, exhibits, an auditorium, binoculars-on-loan, nature store, and snacks/drinks for purchase. The refuge itself has walking trails, an alligator viewing area, picnic area, viewing decks, 40-foot observation tower, boardwalk, and photography blind.

DISTANCE TO THE FIELD SITE
Research will take place in coastal marsh research sites along the Blackjack Peninsula. Blackjack Peninsula takes approximately 30 minutes to reach from the accommodations, including a 15-minute van ride to the docks and then 10–20 minute boat ride to the various research sites along the Peninsula.

FOOD AND WATER
Food will be prepared by team members on a daily basis with support from members of staff. Cooking duties will be shared by team members and guided by members of staff. Meals will include local specialties, such as Texas barbecue, Tex-Mex, and Gulf of Mexico seafood.

TYPICAL MEALS

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<tr>
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<tbody>
<tr>
<td><strong>BREAKFAST</strong></td>
<td>Cereal, fruit, bagels, coffee</td>
</tr>
<tr>
<td><strong>LUNCH</strong></td>
<td>Sandwich (peanut butter &amp; jelly or deli meat), fruit, chips, granola bars</td>
</tr>
<tr>
<td><strong>DINNER</strong></td>
<td>Lasagna and garlic bread, burgers and hot dogs on the grill, Tex-Mex taco night, spaghetti dinner with garlic bread, pizza, Cajun feast (Cajun rice, chicken), smoked sausage on the grill, repeat as necessary.</td>
</tr>
<tr>
<td><strong>SNACKS</strong></td>
<td>Fruit, chips, pretzels, granola bars, etc.</td>
</tr>
<tr>
<td><strong>BEVERAGES</strong></td>
<td>Water (okay to drink from tap), Gatorade</td>
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SPECIAL DIETARY REQUIREMENTS
Please alert Earthwatch to any special dietary requirements (e.g., diabetes, lactose intolerance, nut or other food allergies, vegetarian or vegan diets) as soon as possible, and note them in the space provided on your volunteer forms.

This project can cater for vegetarian diets easily, as well as vegan, and lactose-free diets.
GENERAL CONDITIONS

Winter conditions on the Gulf Coast can be cold, windy, and rainy. During the winter months mosquitoes are not nearly as bad as in the summertime, but that can still be present and all volunteers should prepare for them; however, the coastal breeze can help to keep them at bay. Research will be conducted on flat coastal marshes. Although moderate fitness and balance are required for getting into and out of the research boat and for traversing the slippery coastal marshes, we strive to make the project as accessible as possible. You will get wet and muddy on this expedition but that is part of the fun!

GENERAL CONDITIONS

HUMIDITY: 60% to 90%
TEMPERATURE RANGE: 30’s°F to 70’s°F
RAINFALL: 1 to 4 Inches
WIND: Light breeze to > 30 mph gusts

ESSENTIAL ELIGIBILITY REQUIREMENTS:

All participants must be able to:

• Follow verbal and/or visual instructions independently or with the assistance of a companion.
• Enjoy being outdoors most of the day in variable weather conditions (cold and windy, rainy to warm and humid), in the potential presence of wild animals and biting insects.
• Tolerate a wide temperature range. Early mornings may begin with a light frost, mid day conditions can bring higher temperatures, all combined with elevated coastal winds.
• Traverse slippery/muddy marshes, soft ground, surface water, underbrush, etc. for 3-4 hours over 2 miles per day.
• Carry personal daily supplies such as lunch, water, and some small field equipment.
• Repeatedly squat low enough to collect samples or record plant growth data.
• Sit on a small stool (~10 inches of ground) in a blind conducting bird surveys for 3-4 hours
• Sit upright in a 15-person van and 18-foot research boat on bumpy dirt roads and/or rough water conditions.
## POTENTIAL HAZARDS

### PROTECTING WHOOPING CRANES AND COASTAL HABITATS IN TEXAS

<table>
<thead>
<tr>
<th>HAZARD TYPE</th>
<th>ASSOCIATED RISKS AND PRECAUTIONS</th>
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</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>We will travel on public roads in a quiet area with few traffic issues, but risks inherent in road travel still apply. We’ll take some gravel roads, generally in good condition. Vehicles are maintained to Texas standards. All volunteers will have a seat belt and must use it whenever the vehicle is in motion. A roadside assistance service will be called if a vehicle breaks down. We will also use boats to travel across open water to study sites. The vessel is large (18 ft.), fully equipped with safety equipment (life jackets, flares, first-aid kit), navigation, and communication items. However, there is always potential for the ride to become bumpy for some portion of the trip. During rougher conditions there is the potential for sea spray to be present which will get volunteers wet—a set of rain gear is required to avoid issues with cold temperatures.</td>
</tr>
<tr>
<td>Hiking</td>
<td>You will be walking along transects and the terrain will be uneven and soggy/mucky. You may take your time with any sections of challenging terrain. Take particular care to avoid stepping on any plants/animals that may be present; the Earthwatch scientists will highlight this hazard and show how to walk with appropriate caution when introducing you to the field site.</td>
</tr>
<tr>
<td>Getting Lost</td>
<td>Staff will count team members at frequent intervals, and will caution you against going off alone. Please inform project staff if you need a moment away from the team. Volunteers will work in groups of at least two at all times. We will have cell phones, and reception is good in inland regions. The scientists take great care of knowing, at all times, which area each volunteer is working in, so that lost volunteers can be located quickly and expediently by project staff.</td>
</tr>
<tr>
<td>Animals</td>
<td>We will cover appropriate responses to wildlife encounters in the introductory briefing. Do not approach or handle any wildlife. Though spotting dangerous animals such as alligators and venomous snakes is uncommon, always pay attention to your surroundings. Ticks are present in Texas and can carry Lyme disease, Rocky Mountain Spotted Fever, Ehrlichiosis, and Relapsing Fever. Black flies and mosquitoes can cause irritation in the summer. To avoid insect bites, cover exposed skin and use tick/insect repellant or a mosquito head net. If mosquitoes are bad, full mosquito clothing will be provided.</td>
</tr>
<tr>
<td>Personal Security</td>
<td>Texas is a generally safe region for travelers; however, do not leave valuables unattended in public areas.</td>
</tr>
<tr>
<td>Swimming</td>
<td>Although the accommodations are close to tempting white-sand beaches, we do NOT permit swimming and other water sports during this expedition for safety reasons.</td>
</tr>
<tr>
<td>Distance from</td>
<td>Due to the relative remoteness of the site, it can take up to thirty minutes to reach the nearest hospital. Those with severe or chronic conditions that may require immediate medical care (e.g., heart problems, severe allergies that can result in anaphylactic shock, etc.) should carefully consider their participation in this project and discuss with their doctors the implications of the distance of the hospital from the project site.</td>
</tr>
<tr>
<td>Medical Care</td>
<td></td>
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<tr>
<td>Disease</td>
<td>Please see the Health Information section for immunization recommendations. Most diseases are prevented with basic safety cautions. Please see the CDC <a href="http://cdc.gov">cdc.gov</a> or WHO <a href="http://who.int">who.int</a> websites for more information. Diseases present in this region of the US include, but are not limited to, Lyme disease, rabies, bovine spongiform encephalopathy, pertussis, West Nile Fever, and traveler’s diarrhea. Traveler’s diarrhea: Traveler’s diarrhea affects 20–50% of all international travelers. Always wash your hands with soap and water or a hand sanitizer before eating. You should also carry an over-the-counter anti-diarrheal medication in your personal first aid kit. Speak to your doctor about other options for treating traveler’s diarrhea.</td>
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SAFETY

HEALTH INFORMATION

EMERGENCIES IN THE FIELD
Accommodations and vehicles all have first-aid kits. In the event of a medical emergency, the Earthwatch scientists will administer first aid, and depending on the seriousness of the injury/condition, either take the volunteer to the hospital using one of the project vehicles (always available) or call emergency services by cell phone. If a volunteer has to leave the expedition early for emergency reasons, the Earthwatch scientists will determine the most appropriate form of transport to the airport (either one of the project vehicles or ambulance).

STAFF CERTIFIED IN SAFETY TRAINING:
Jeffrey Wozniak (First Aid/CPR)

NEAREST HOSPITAL(S):
MEMORIAL MEDICAL CENTER
815 N Virginia Street, Port Lavaca, TX 77979

ROCKPORT URGENT CARE FACILITY
2621 Texas 35 Business, Rockport, TX 78382

NORTHSHEORE EMERGENCY CENTER
1702 Highway 181 North, Suite A-11, Portland, TX 78374

For emergency assistance in the field, please contact Earthwatch’s 24-hour emergency hotline number on the last page of this briefing. Earthwatch is available to assist you 24 hours a day, 7 days a week; someone is always on call to respond to messages that come into our live answering service.

IMMUNIZATIONS
Please be sure your routine immunizations are up-to-date (for example diphtheria, pertussis, tetanus, polio, measles, mumps, rubella and varicella). Medical decisions are the responsibility of each volunteer and his or her doctor, and the following are recommendations only. Visit the Healix Travel Oracle website through the “Travel Assistance and Advice” page in your Earthwatch portal, cdc.gov or who.int for guidance on immunizations.
TRAVEL TIPS
SUGGESTIONS FOR THE ROAD

YOUR DESTINATION
LANGUAGE: English
TIME ZONE: Central Time Zone (UTC - 6).
ELECTRICITY: The U.S. standard voltage used for small appliances, hair dryers, electronic equipment, etc. is 120 volts, 60Hz, supplied through type A or B sockets.

MONEY MATTERS
LOCAL CURRENCY: US Dollars
PERSONAL FUNDS: We recommend you bring some spending money ($100–200 is sufficient) for snacks, extra beverages (i.e. soda) and souvenirs. Books and souvenirs can be purchased at the ANWR visitor’s center. Cash or credit cards are accepted. There is a Tavern at Hopper’s Landing that only accepts cash.

PASSPORTS AND VISAS
Passport and visa requirements are subject to change. Check with your travel advisor, embassy or consulate in your home country for requirements specific to your circumstances. Generally, passports must be valid for at least six months from the date of entry and a return ticket is required.

<table>
<thead>
<tr>
<th>Citizenship</th>
<th>Passport Required?</th>
<th>Visa Required?</th>
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<tbody>
<tr>
<td>United States</td>
<td>No (Can be used to board flight)</td>
<td>No</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Europe</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Australia</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Yes</td>
<td>No</td>
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</table>

If a visa is required, participants should apply for a TOURIST visa. Please note that obtaining a visa can take weeks or even months. We strongly recommend using a visa agency, which can both expedite and simplify the process.

CONTACT INFORMATION
You may be required to list the following contact information on your visa application and immigration form, or if your luggage does not make it to baggage claim at your destination:

Dr. Jeffrey Wozniak—Earthwatch
C/O Aransas National Wildlife Refuge
1 Wildlife Circle, Austwell Texas 77950
## EXPEDITION PACKING CHECKLIST

### WHAT TO BRING

<table>
<thead>
<tr>
<th>GENERAL</th>
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<tbody>
<tr>
<td>✓ This expedition briefing</td>
</tr>
<tr>
<td>✓ Your travel plans, rendezvous details, and Earthwatch’s emergency contact information</td>
</tr>
<tr>
<td>✓ Photocopies of your passport, flight itinerary, and credit cards in case the originals are lost or stolen; the copies should be packed separately from the original documents</td>
</tr>
<tr>
<td>✓ Passport and/or visa (if necessary)</td>
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<tr>
<td>✓ Certification of vaccination (if necessary)</td>
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<tr>
<td>✓ Documentation for travel by minors (if necessary)</td>
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<td>✓ Credit card that may be used in the event of an emergency (travel delays, etc.)</td>
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<tr>
<th>CLOTHING/FOOTWEAR FOR FIELDWORK</th>
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<tr>
<td>Please plan to dress in layers, as temperatures and conditions will be variable throughout the day</td>
</tr>
<tr>
<td>✓ Earthwatch T-shirt</td>
</tr>
<tr>
<td>✓ Lightweight, long-sleeved shirts – to be worn for both sun and mosquito protection <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Short-sleeve shirts to be worn as a base layer <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Lightweight field pants - cotton-nylon blend hiking pants with zip off legs work well <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Midweight jacket that offers wind protection and warmth. <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Jeans (they do not dry quickly) and yoga/sweat pants (mosquitoes can bite through them) are not acceptable for fieldwork.</td>
</tr>
<tr>
<td>✓ Wide brimmed hat for sun protection <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ We find that a comfortable pair of sneakers/tennis shoes (hard soled and closed toe) are best for field work. They provide good support and traction in the muddy coastal marsh research sites and can easily be taken off with fieldwork is completed. Hard-soled, tightly fitted dive booties may also be worn <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Socks to be worn in the field - will get wet and muddy <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Mid-calf or higher rubber boots are not acceptable for fieldwork as they can over-top with water (leaving volunteer wet) or get stuck on the deeper mud at the research sites</td>
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<table>
<thead>
<tr>
<th>PACKABLE RAINFOREDPACKAGE FOR LEISURE</th>
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<tbody>
<tr>
<td>✓ At least one set of clothing to wear outside in the evenings (we recommend a long sleeve shirt and long pants for warmth and to prevent bites from mosquitoes)</td>
</tr>
<tr>
<td>✓ At least one set of clothing to keep clean for end of expedition</td>
</tr>
<tr>
<td>✓ Pair of light shoes or sandals</td>
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<thead>
<tr>
<th>FIELD SUPPLIES</th>
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<tbody>
<tr>
<td>✓ Small daypack or dry bag to keep your personal items together and dry when in the field <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Sunscreen lotion with SPF 30 or higher <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Insect repellent (ideally fragrance-free or with a mild perfume); oil-based repellent such as Skin-So-Soft by Avon is especially effective against mosquitoes <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Reusable water bottle, wide-mouth Nalgene recommended <strong>(REQUIRED)</strong></td>
</tr>
<tr>
<td>✓ Flashlight with extra batteries and extra bulb</td>
</tr>
<tr>
<td>✓ Sunglasses</td>
</tr>
<tr>
<td>✓ Waterproof case for any cell phone or electronics you plan to take in the field—these items will get wet.</td>
</tr>
<tr>
<td>✓ Binoculars (high quality/magnification will result in best views of birds and other wildlife on the expedition)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BEDDING AND BATHING</th>
</tr>
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<tbody>
<tr>
<td>✓ Bed linens, blankets, pillows and bath towels will all be provided</td>
</tr>
</tbody>
</table>

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<tr>
<th>PERSONAL SUPPLIES</th>
</tr>
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<tbody>
<tr>
<td>✓ Personal toiletries (biodegradable soaps and shampoos are encouraged)</td>
</tr>
<tr>
<td>✓ Antibacterial wipes or lotion (good for cleaning hands while in the field)</td>
</tr>
</tbody>
</table>
Personal first aid kit (e.g., anti-diarrhea pills, antibiotics, antiseptic, itch-relief, pain reliever, bandages, blister covers, etc.) and medications

Spending money

Optional items

- Comfortable shoes to change into after conducting fieldwork
- Flip flops or sandals for the shower or to wear around the accommodation
- Scarf for time on boat if you are sensitive to windy conditions (high zipping rain jacket can also suffice here)

- Camera, film or memory card(s), extra camera battery
- Hardware for sharing digital photographs at the end of the expedition
- Dry bag or plastic sealable bags (e.g. Ziploc) to protect equipment like cameras from dust, humidity, and water
- Books, games, art supplies, etc. for free time
- Earplugs for light sleepers

Note: Do not bring more luggage than you can carry and handle on your own. If traveling by air and checking your luggage, we advise you to pack an extra set of field clothing and personal essentials in your carry-on bag in case your luggage is lost or delayed.

Laundry facilities will be available during the expedition.

Project Staff

Your Resources in the Field

Earthwatch Scientist Dr. Jeffrey Wozniak received his BS in biology from Allegheny College in Meadville, PA, and his PhD in biological sciences at Florida International University in Miami, FL. He is currently an assistant professor in the Department of Biological Sciences at Sam Houston State University (SHSU). Throughout his career he has conducted research in a wide range of ecosystem types, from subalpine to coastal wetlands and temperate deciduous to sub-tropical mangrove forests. His current research in the Aquatic Ecosystems Ecology Lab at SHSU focuses on understanding how coastal wetlands are impacted by various natural and anthropogenic variables, including sea-level rise and modified freshwater inflows. Much of this work has been done at the Aransas National Wildlife Refuge, which is home to the endangered whooping crane.

Field Team Assistant Lindsey Tiegs received her BS from the University of Wisconsin - Milwaukee. Lindsey is currently a Biological Sciences Master’s Student in the Aquatic Ecosystems Ecology Lab at Sam Houston State University. Before coming to SHSU, Lindsey spent a summer working for Wildlife Preservation Canada on their Eastern Loggerhead Shrike Recovery project, where she conducted pre/post release monitoring of captive bred birds. Lindsey has participated in numerous Earthwatch expeditions and the data collected during this expedition will be part of her ongoing Master’s thesis research.

Note: Staff schedules are subject to change.
RECOMMENDED READING
YOUR RESOURCES AT HOME

ARTICLES

PROJECT-RELATED WEBSITE
• Aquatic Ecosystems Ecology Lab At SHSU: www.shsu.edu/jrw034/index.htm
• Aransas National Wildlife Refuge: www.fws.gov/refuge/aransas/
• Whooping Crane Survey Methods: http://www.fws.gov/refuge/aransas/science/whooping_crane_surveys.html

EARTHWATCH SOCIAL MEDIA
FACEBOOK: facebook.com/Earthwatch
TWITTER: twitter.com/earthwatch_org
INSTAGRAM: instagram.com/earthwatch
BLOG: earthwatchunlocked.wordpress.com
YOUTUBE: youtube.com/earthwatchinstitute

RESOURCES

LITERATURE CITED

LITERATURE
EMERGENCY NUMBERS
AROUND-THE-CLOCK SUPPORT

EARTHWATCH’S 24-HOUR EMERGENCY HOTLINE

Call Earthwatch’s 24-hour on-call duty officer in the U.S.:
+1 (978) 461.0081
+1 (800) 776.0188 (toll-free for calls placed from within the U.S.)
After business hours, leave a message with our live answering service. State that you have an emergency and give the name of your expedition, your name, the location from which you are calling, and if possible, a phone number where you can be reached. An Earthwatch staff member will respond to your call within one hour.

TRAVEL ASSISTANCE PROVIDER: HEALIX INTERNATIONAL

+44.20.3667.8991 (collect calls and reverse charges accepted)
U.S. TOLL FREE: +1.877.759.3917
U.K. FREE PHONE: 0.800.19.5180
E-MAIL: earthwatch@healix.com
You may contact Healix International at any time. They can assist in the event of a medical or evacuation emergency or for routine medical and travel advice, such as advice on visas and vaccine requirements.

FOR VOLUNTEERS BOOKED THROUGH THE EARTHWATCH AUSTRALIA OFFICE:

Earthwatch Australia 24-Hour Emergency Helpline
+61.0.3.8508.5537
MESSAGE FROM EARTHWATCH

DEAR EARTHWATCHER,

Thank you for joining this expedition! We greatly appreciate your decision to contribute to hands-on environmental science and conservation. It is volunteers like you who fuel our mission and inspire our work.

While at Earthwatch, I’ve had the opportunity to field on a few expeditions, most recently in Kenya with one of my daughters. Each expedition has touched me deeply, and made me proud to be able to roll up my sleeves alongside my fellow volunteers and contribute to such meaningful work.

As an Earthwatch volunteer, you have the opportunity to create positive change. And while you’re out in the field working toward that change, we are committed to caring for your safety. Although risk is an inherent part of the environments in which we work, we’ve been providing volunteer field experiences with careful risk management and diligent planning for nearly 45 years. You’re in good hands.

If you have questions as you prepare for your expedition, we encourage you to contact your Earthwatch office. Thank you for your support, and enjoy your expedition!

Sincerely,

Scott Kania
President and CEO, Earthwatch